

# Improvements in episodic future thinking methodology

## Identifying a better control

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## Introduction

- Episodic future thinking (EFT) is the ability to vividly imagine one's personal future<sup>1</sup>
- Interventions where participant's engage in EFT have decreased delay discounting (DD), the decision to take a smaller reward sooner, rather than a larger, delayed reward – a phenomenon which is associated with multiple health behaviors
- Episodic recent thinking (ERT) is the vivid imagining of events that took place in one's recent past and is a common control in EFT intervention studies
- It has been hypothesized that ERT could lead participants to personal future projection as some of the same brain regions are involved in both retrospection and prospection<sup>2</sup>
- This study investigated the efficacy of a new episodic recent thinking control that standardized the participant's recent memories to eliminate the potential for personal prospection (ERT<sub>S</sub>)

## Methods

### RECRUITMENT

- Participants were recruited using flyers and the Division of Behavioral Medicine database
- Potential participants completed an online eligibility screening on SurveyMonkey

### EXCLUSION CRITERIA

- Depression and psychopathology
- Tobacco, drug, and alcohol use >10 drinks/week
- Prior participation in similar studies
- One-item discounting measure<sup>3</sup>

### PARTICIPANTS

- N = 40, adults 18 – 45
- One statistical outlier was excluded
- Participant characteristics are summarized in **Table 1** by group

### RANDOMIZATION

Participants were randomly assigned to one of three groups:

- Episodic future thinking (EFT)
- Episodic recent thinking (ERT)
- Standardized episodic recent thinking (ERT<sub>S</sub>)

## Methods cont.

### MEASURES

- Demographics (e.g. race, age, sex)
- Time perspective (Consideration of Future Consequences Scale)
- 6-item food insecurity questionnaire
- Perceived stress scale
- Delay discounting - adjusting amount discounting task with fixed smaller immediate reward and titrating larger reward in the future<sup>4</sup>

### Data Analysis

- One-way analysis of variance (ANOVA) was used to test for differences of continuous variables and Chi-Square was used to check for differences in dichotomous variables
- ANOVA and linear contrasts were used to compare overall between group differences in area under the curve (AUC) values

## Results

- No between-group differences were found for demographic variables (**Table 1**)
- Between groups ANOVAs showed that groups significantly differed in delay discounting, as measured by the area under the curves values (**Figure 1**)
- There was a main effect of EFT on discounting ( $F(2,38) = 3.86, p = 0.03$ ), such that the EFT group showed less discounting of the future than the ERT and ERT<sub>S</sub> groups

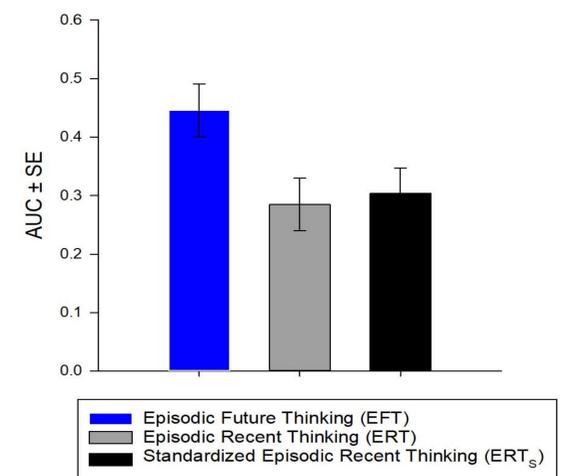
**Table 1. Participant Characteristics by Group (N = 40)**

	EFT (n = 13)	ERT (n = 13)	ERT <sub>S</sub> (n = 14)	p
Age (Mean ± SE, years)	30.1 ± 2.3	29.5 ± 2.3	28.4 ± 2.2	.87
Income (Mean ± SE, K)	69 ± 17	79 ± 17	59 ± 16	.66
Education (Mean ± SE, years)	14.7 ± .56	15.1 ± .56	13.9 ± .54	.33
Sex (n,%)				.77
Female	10 (76.92%)	9 (69.23%)	9 (64.29%)	
Male	3 (23.08%)	4 (30.77%)	5 (35.71%)	
Minority status (n, %)				.27
Minority	3 (23.08%)	7 (53.85%)	6 (42.86%)	
Non-minority	10 (76.92%)	6 (46.15%)	8 (57.14%)	

## Results cont.

- Linear contrasts showed that the EFT group discounted the future less than the ERT group ( $F(1,24) = 6.43, p = 0.02$ ) and the ERT<sub>S</sub> group ( $F(1,25) = 5.15, p = 0.03$ )
- The ERT<sub>S</sub> group and the ERT group did not differ ( $F(1,25) = 0.10, p = 0.76$ )

Figure 1. Area-Under-Curve by Group



## Conclusion

- EFT improves DD, even among a highly impulsive sample – a result which is consistent with previous studies
- This study establishes the validity of using a standardized ERT control that focused participants on the recent personal experience of playing mobile application games in the lab
- The novel control may eliminate the potential prospective element of personalized ERT

## References

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